Reducer Model Nomenclature

WP	U	—	35	—	50	—	CD
Series Name	Type		Size		Ratio		Code *
WP WP series	**C:** Component type **S:** Simple unit type **U:** Unit type Hollow unit		35 42 50 63 80		50 80 100 120		CD CDH SD SDH

* For code details, check Dimensions Table

Ratio Matrix Availability

Frame Size	Reduction Ratio			
	50	80	100	120
35				
42				
50				
63				
80				

Reducer Specifications

Size	Ratio R*1	Nominal Output Torque *2	Maximum Output Torque *3	Emergency Stop Torque *4	Nominal Input Speed *5	Maximum Input Speed *6	Life *7
		[Nm]	[Nm]	[Nm]	[r/min]	[r/min]	[hours]
35	50	3.7	12	24	3000	8500	7000
	80	5.4	16	29			
	100	5.4	19	31			
42	50	11	23	48	3000	7300	
	80	15	29	52			
	100	16	37	55			
	120	16	37	55			
50	50	17	39	69	3000	6500	
	80	24	51	75			
	100	28	57	76			
	120	28	57	76			
63	50	27	69	127	3000	5600	
	80	44	96	147			
	100	47	110	152			
	120	47	110	152			
80	50	53	151	268	3000	4800	
	80	82	212	334			
	100	96	233	359			
	120	96	233	359			

*1 Reduction ratio is to be calculated by the formula in the previous page, using R value in this table.
*2 The maximum allowable value at the input rotation speed of 2000r/min
*3 The maximum torque when starting and stopping.
*4 The maximum torque when it receives shock.
*5 The maximum average input speed.
*6 The maximum input speed.
*7 The life time at the input rotation speed of 2000 r/min and nominal output torque.

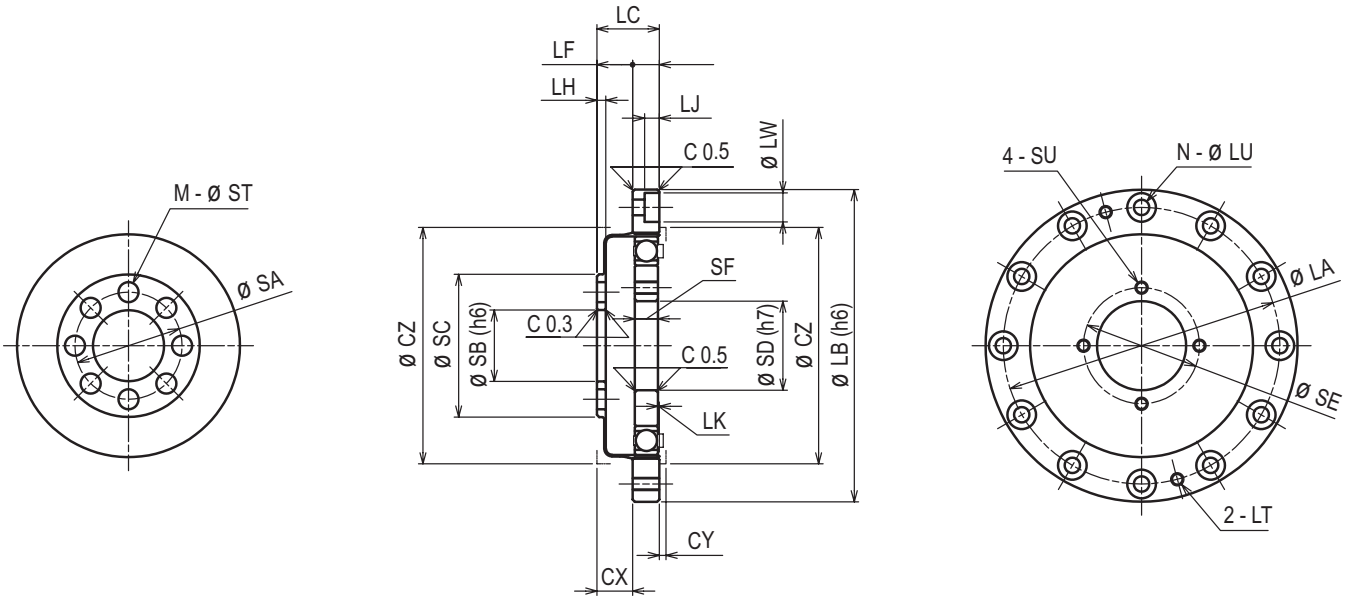
Dimensions

Closed Type: Component



WPC-□-□-CD

Size	Weight	Moment of Inertia
	kg	x10^{-4}kgm^2
35	0.062	0.0226
42	0.10	0.0565
50	0.16	0.113
63	0.26	0.342
80	0.57	1.18



[mm]

Size	LA	LB	LE	LF	LG	LH	LJ	LK	N	LU	LW	LT
35	44	50	11	6.5	4.5	1.4	-	0.3	6	3.5	-	M3
42	54	60	12.5	7.5	5	1.7	-	0.3	8	3.5	-	M3
50	62	70	14	8	6	2	3.3	0.3	12	3.5	6.5	M3
63	75	85	17	10	7	2	3.3	0.4	12	3.5	6.5	M3
80	100	110	22	13	9	2.5	4.4	0.5	12	4.5	8	M4

Size	SA	SB	SC	SD	SE	SF	CX	CY	CZ	M	ST	SU
35	17	11	23.5	11	17	4	6.5	1	38	8	3.5	M3
42	19.5	11	27	15	21	5	7.5	1	45	8	4.5	M3
50	24	16	32	20	26	5.2	8	1.5	53	8	4.5	M3
63	30	20	40	24	30	6.3	10	1.5	66	8	5.5	M3
80	41	30	52	32	40	8.6	13	2	86	10	6.5	M4

* Inner dimensions of CX, CY, CZ are recommended dimensions.

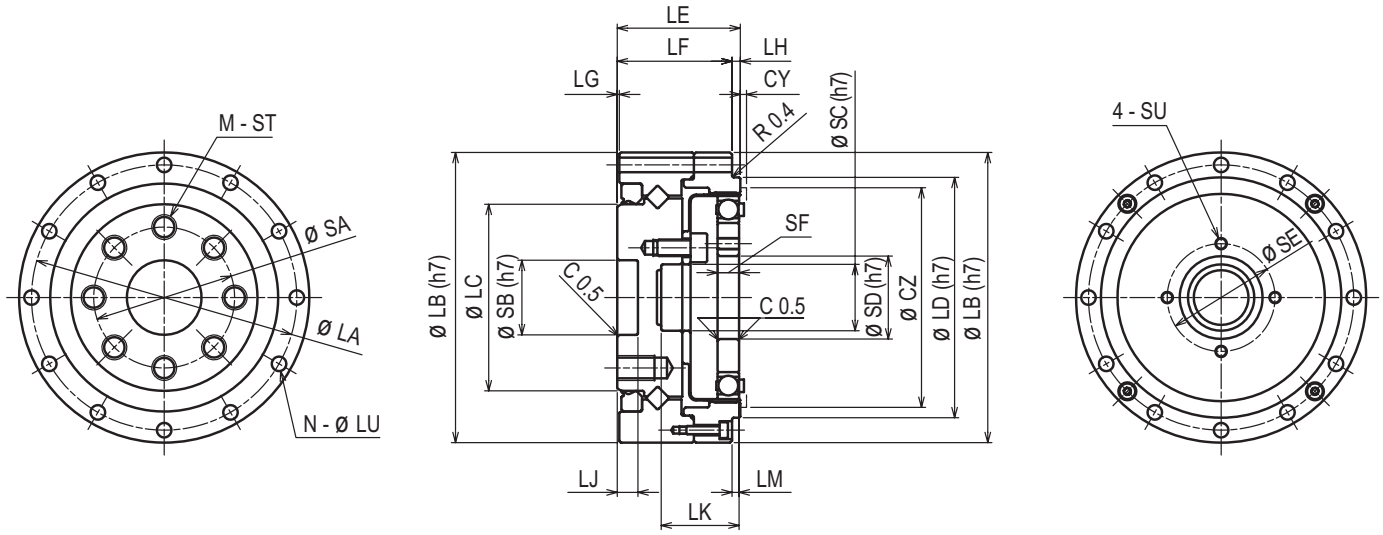
Dimensions

Closed Type: Unit

WPU-□-□-CD

Size	Weight	Moment of Inertia
	kg	x10^{-4}kgm^2
35	0.33	0.0227
42	0.43	0.0565
50	0.61	0.113
63	1.1	0.343
80	2.2	1.18





[mm]

Size	LA	LB	LC	LD	LE	LF	LG	LH	LJ	LK	LM	N	LU
35	49	55	31	42.5	25	23	0.5	2	5	14.8	1.7	6	3.5
42	56	62	38	49.5	26.5	24.5	0.5	2	5	16.3	1.7	10	3.5
50	64	70	45	58	29.7	27.7	0.5	2	5	18.8	1.7	12	3.5
63	79	85	58	73	37.1	34.1	0.5	3	5.5	23.6	2.6	18	3.5
80	104	112	78	96	43	40	1	3	5.5	30.6	2.5	18	4.5

Size	SA	SB	SC	SD	SE	SF	CY	CZ	M	ST	SU
35	25	12	11	11	17	4	1	38	10	M3 × 6	M3
42	27	14	11	15	21	5	1	45	8	M5 × 8	M3
50	34	18	16	20	26	5.2	1.5	53	8	M6 × 9	M3
63	42	24	20	24	30	6.3	1.5	66	8	M8 × 12	M3
80	57	32	30	32	40	8.6	2	86	10	M8 × 12	M4

* Inner dimensions of CY, CZ are recommended dimensions.

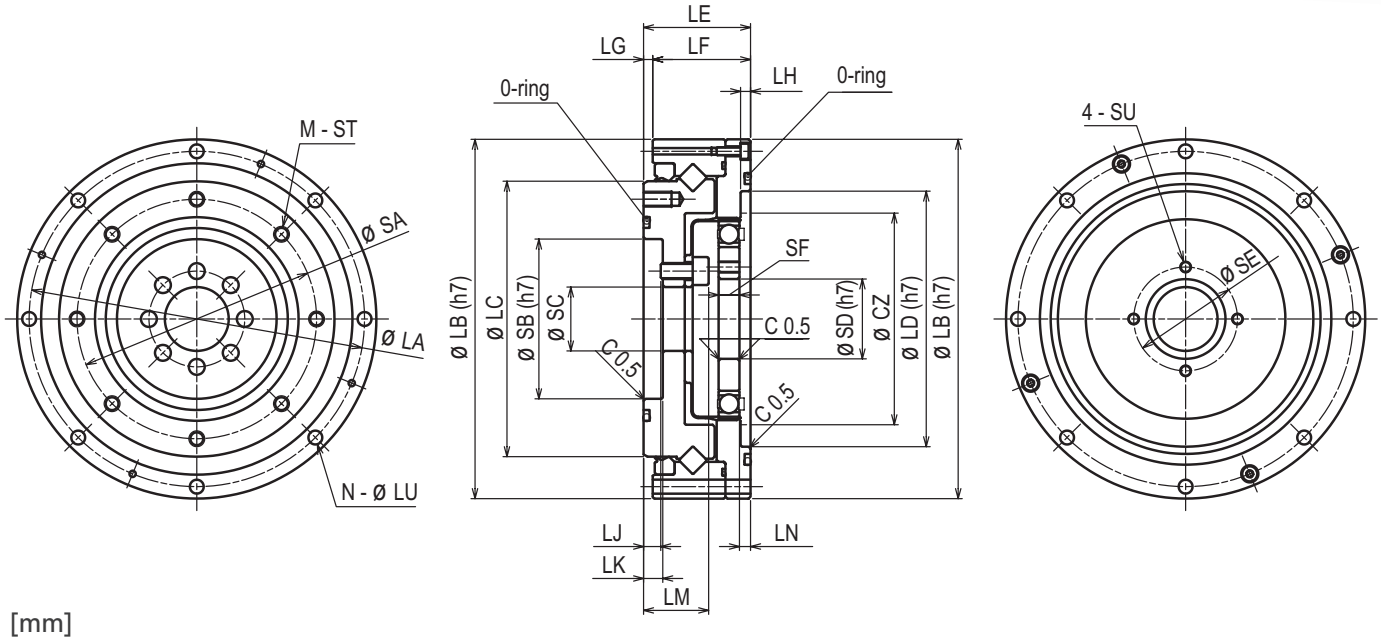
Dimensions

Open Type: Unit

WPU-□-□-CDH

Size	Weight	Moment of Inertia
	kg	x10^{-4}kgm^2
35	0.46	0.0228
42	0.63	0.0571
50	0.91	0.113
63	1.6	0.344
80	3.0	1.18





[mm]

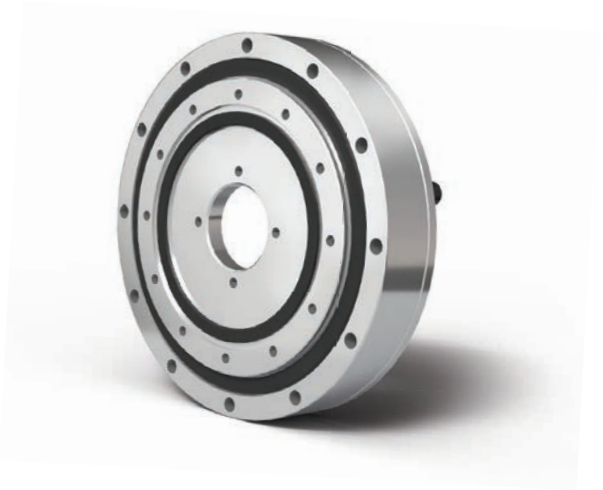
Size	LA	LB	LC	LD	LE	LF	LG	LH	LJ	LK	LM	LN	N	LU
35	64	70	49	48	22	21.5	0.5	2.5	3.9	4.9	12.9	2.8	6	3.5
42	74	80	59	56	22.7	22.2	0.5	2.5	1.4	3.7	13.4	2.8	8	3.5
50	84	90	69	64	26.8	24.5	2.3	2.5	4.3	4.8	16.3	2.8	8	3.5
63	102	110	84	80	31.5	29.4	2.1	3	3.5	5.5	18.5	3.4	10	4.5
80	132	142	110	106	37	34.2	2.8	3	2.5	6	20.5	3.5	10	5.5

Size	SA	SB	SC	SD	SE	SF	CZ	M	ST	SU
35	42	30	11	11	17	4	38	8	M3 × 5	M3
42	50	34	11	15	21	5	45	10	M3 × 6	M3
50	60	40	16	20	26	5.2	53	8	M4 × 7	M3
63	73	52	20	24	30	6.3	66	8	M5 × 8	M3
80	96	70	30	32	40	8.6	86	8	M6 × 10	M4

* Inner dimensions of CY, CZ are recommended dimensions.

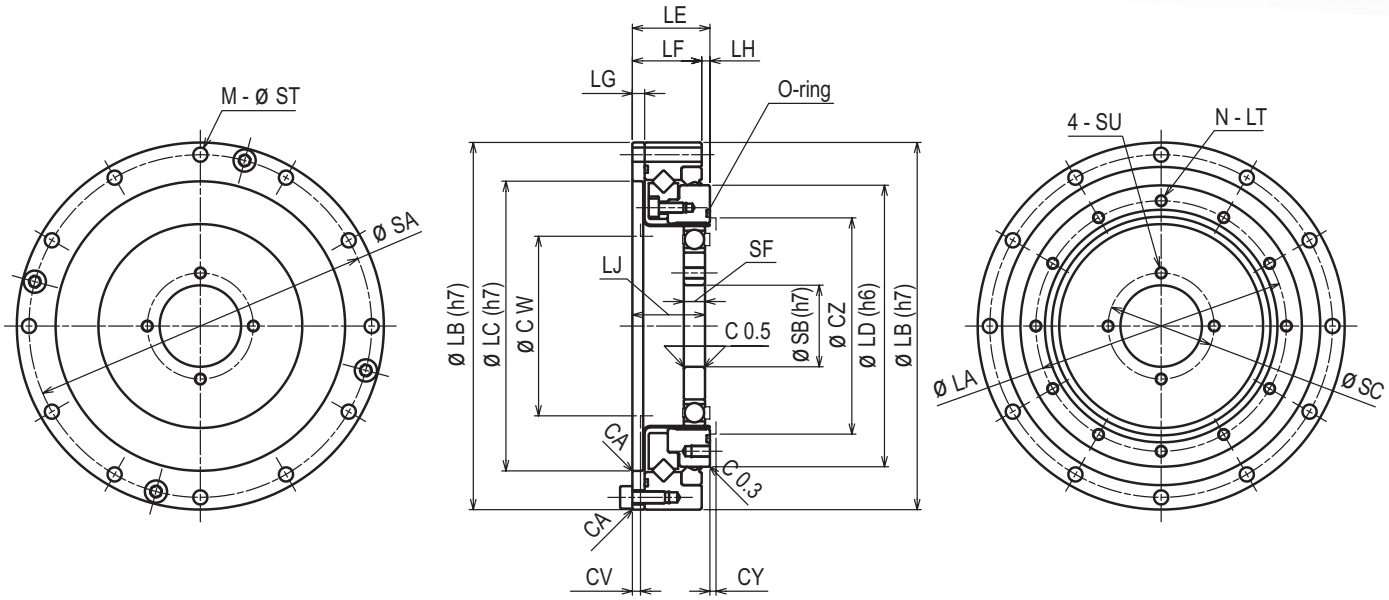
Dimensions

Open Type, Simple Unit



WPS-□-□-SD

Size	Weight	Moment of Inertia
	kg	x10^{-4}kgm^2
35	0.31	0.0233
42	0.43	0.0578
50	0.54	0.114
63	0.93	0.347
80	2.0	1.20



[mm]

Size	LA	LB	LC	LD	LE	LF	LG	LH	LJ	N	LT
35	43	70	50	49	17.5	15.5	2.4	2	15.7	8	M3 × 4.5
42	52	80	61	59	18.5	16.5	3	2	16.9	12	M3 × 4.5
50	61.4	90	71	69	19	17	3	2	17.8	12	M3 × 4.5
63	76	110	88	84	22	20	3.3	2	21.6	12	M4 × 6
80	99	142	114	110	27.9	23.6	3.6	4.3	27.3	12	M5 × 8

Size	O-ring
35	38.0 × 0.8
42	45.0 × 0.8
50	55.0 × 1.2
63	68.0 × 1.2
80	86.0 × 1.2

Size	SA	SB	SC	SF	CA	CY	CZ	CV	CW	M	ST	SU
35	64	11	17	4	0.3	1	36.5	1.6	31	8	3.5	M3
42	74	15	21	5	0.3	1	43.5	2	37	12	3.5	M3
50	84	20	26	5.2	0.3	1.5	53	2	44	12	3.5	M3
63	102	24	30	6.3	0.3	1.5	66	2	56	12	4.5	M3
80	132	32	40	8.6	0.5	2	84	2	72	12	5.5	M4

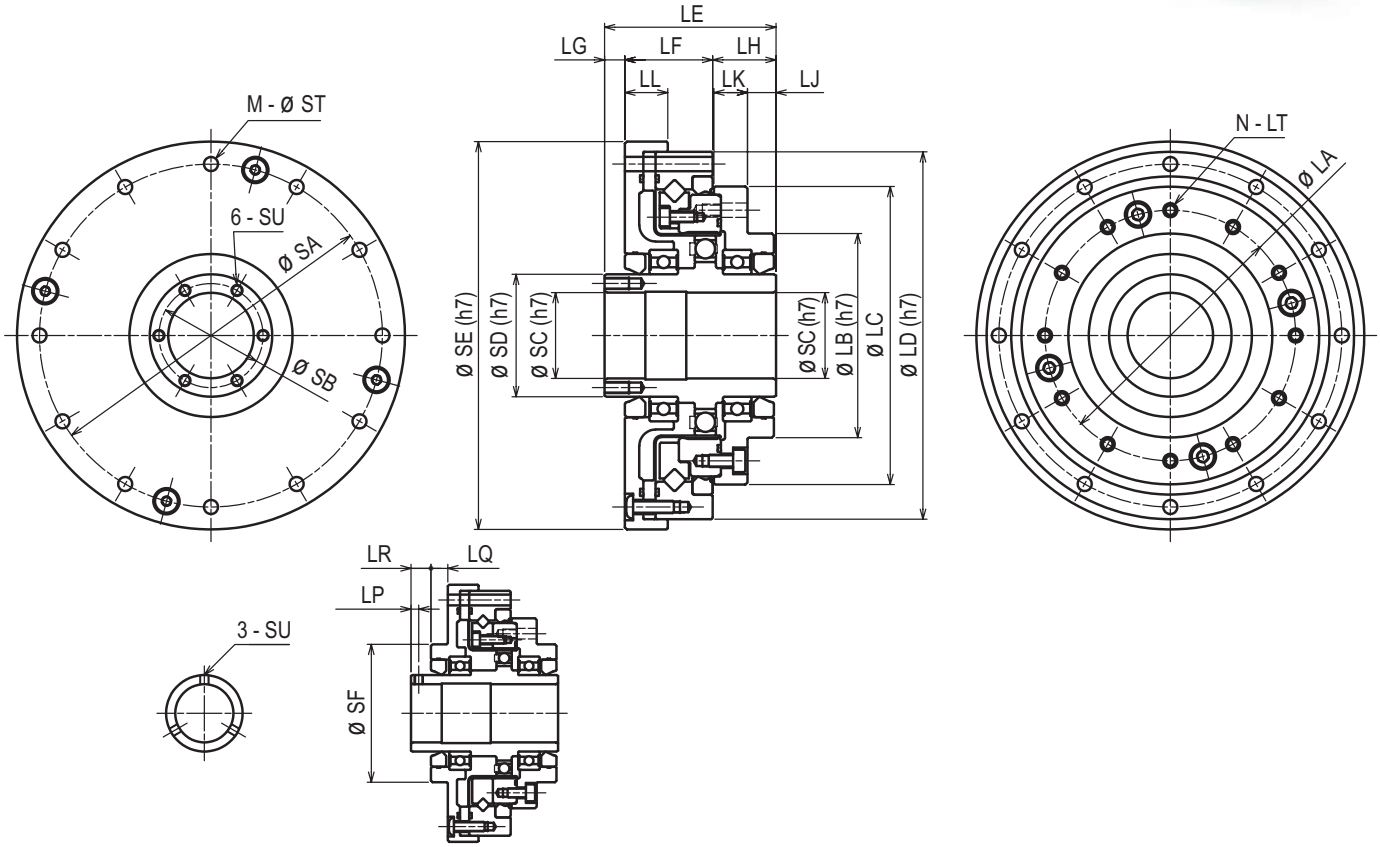
Dimensions

Open Type, Unit (Hollow Shaft)

WPU-□-□-SDH

Size	Weight	Moment of Inertia
	kg	x10^{-4}kgm^2
35	0.49	0.0839
42	0.66	0.180
50	0.84	0.352
63	1.4	0.940
80	2.8	3.47





[mm]

INPUT SHAFT FOR 35 & 42

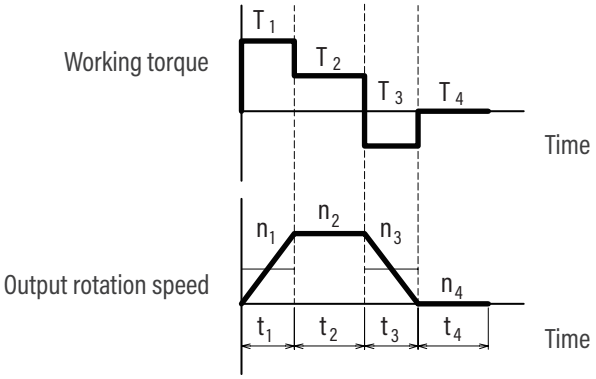
Size	LA	LB	LC	LD	LE	LF	LG	LH	LJ	LK	LL	LP	LQ	LR
35	43	36	52	70	45.5	19.5	12	14	6.5	7.5	9	2.5	5.5	6.5
42	52	45	62	80	48	20.5	12	15.5	7	8.5	10	2.5	5.5	6.5
50	61.4	50	73	90	42	21.5	5	15.5	7	8.5	10.5	-	-	-
63	76	60	87	110	46.5	24	6	16.5	6	10.5	10.5	-	-	-
80	99	75	114	142	55	28.6	7	19.4	7.5	11.9	12	-	-	-

Size	SA	SB	SC	SD	SE	SF	M	ST	SU	N	LT
35	64	-	14	20	74	36	8	3.5	M3	8	M3 × 4.5, Ø 3.5 × 5.5
42	74	-	19	25	84	45	12	3.5	M3	12	M3 × 4.5, Ø 3.5 × 6.5
50	84	25.5	21	30	95	-	12	3.5	M3 × 6	12	M3 × 4.5, Ø 3.5 × 6.5
63	102	33.5	29	38	115	-	12	4.5	M3 × 6	12	M4 × 6, Ø 4.5 × 8.5
80	132	48	41	54	147	-	12	5.5	M3 × 6	12	M5 × 8, Ø 5.5 × 7.6

Life Estimation (Elastic Bearing)

Life span for the elastic bearing

Operation Cycle Example



Calculation formula for output torque

Average output torque	**Tao**	**Nm**	$Tao = \sqrt[3]{\frac{n_1 \cdot t_1 \cdot \lvert T_1 \rvert^3 + n_2 \cdot t_2 \cdot \lvert T_2 \rvert^3 + \cdots + n_n \cdot t_n \cdot \lvert T_n \rvert^3}{n_1 \cdot t_1 + n_2 \cdot t_2 \cdots n_n \cdot t_n}}$
Peak output torque value	**Tmo**	**Nm**	Tmo = maximum value of $T_1, T_2, \cdots T_n$

Please make sure the peak output torque is below the maximum output torque in the specification table.

Calculation formula for input speed

Average output rotation speed	**nao**	**r/min**	$nao = \frac{n_1 \cdot t_1 + n_2 \cdot t_2 \cdots n_n \cdot t_n}{t_1 + t_2 + \cdots + t_n}$
Peak output rotation speed	**nmo**	**r/min**	nmo = maximum value of $n_1, n_2, \cdots n_n$
Average input speed	**nai**	**r/min**	$nai = nao \times R$ (R = ratio)
Peak input speed value	**nmi**	**r/min**	$nmi = nmo \times R$ (R = ratio)

Please make sure the peak input speed value is below the maximum input speed in the specification table.

Calculation formula for life span

Part life span for the elastic bearing	**Lhe**	**h**	$Lhe = 7000 \times \left(\frac{Tar}{Tao}\right)^3 \times \left(\frac{nar}{nai}\right)$
Rating torque	**Tar**	**Nm**	*Nominal output torque in the specification table*
Rating input rotation speed	**nar**	**r/min**	*2000 r/min*

Life Estimation (Main Bearing)

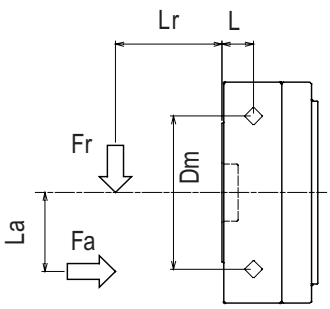
Model selection / Life estimation

Main bearing specification (Cross roller bearing)

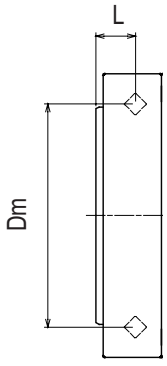
Series	Size	Pitch Circle Diameter of the Bearing Rollers	Offset	Basic Dynamic Load Rating	Basic Static Load Rating	Allowable Moment	Moment Rigidity
		Dm	L	C	Co	Mal	Km
		m	m	N	N	Nm	× 10^4 Nm/rad
WPU-□-□-CD	35	0.034	0.009	5620	6540	36.5	7.35
	42	0.041	0.010	6340	8170	55.8	8.02
	50	0.049	0.011	10400	13300	91.0	13.5
	63	0.062	0.013	15800	21100	156	27.7
	80	0.082	0.013	24400	35600	313	66.0
WPU-□-□-CDH	35	0.051	0.006	7110	10200	74.0	14.4
	42	0.060	0.007	10900	15200	124	19.7
	50	0.071	0.008	17200	24700	187	40.1
	63	0.086	0.009	25100	37400	258	71.5
	80	0.114	0.011	43300	67600	580	188
WPS-□-□-SD	35	0.051	0.011	8010	11400	37.0	8.86
	42	0.061	0.011	7370	10900	62	20.8
	50	0.072	0.011	8030	12800	93	22.5
	63	0.087	0.013	14300	24500	129	33.3
	80	0.113	0.018	23700	42500	290	84.5
WPU-□-□-SDH	35	0.051	0.017	8010	11400	37.0	8.86
	42	0.061	0.018	7370	10900	62	20.8
	50	0.072	0.018	8030	12800	93	22.5
	63	0.087	0.021	14300	24500	129	33.3
	80	0.113	0.026	23700	42500	290	84.5

External load

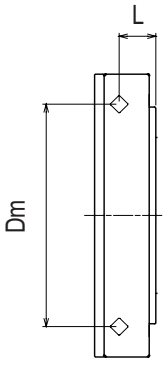
WPU-□-□-CD



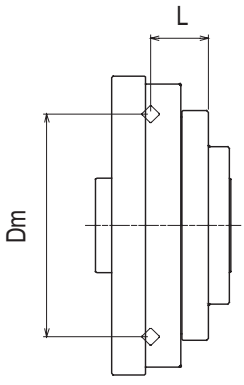
WPU-□-□-CDH



WPS-□-□-SD



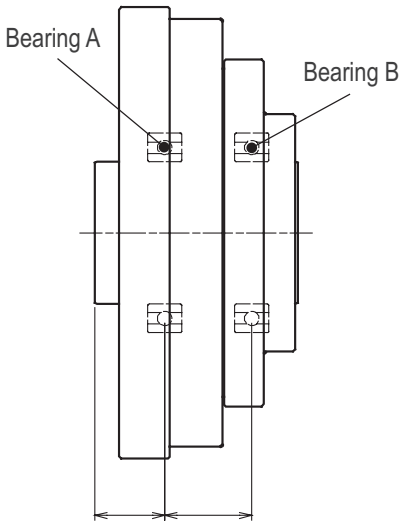
WPU-□-□-SDH



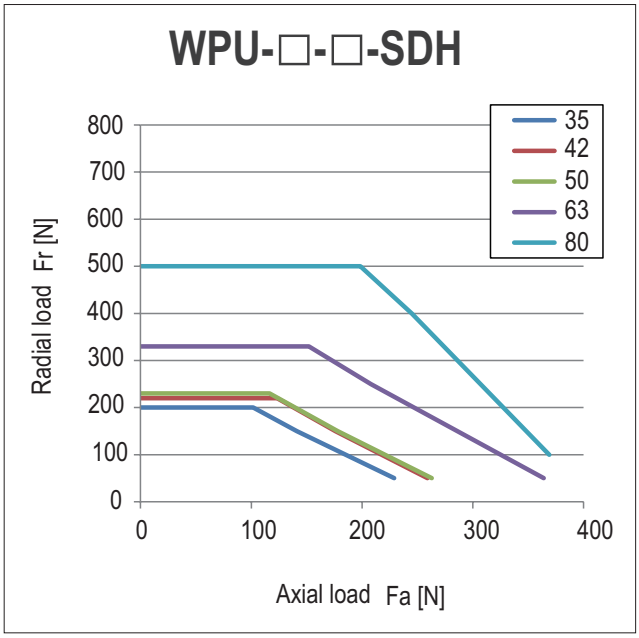
Maximum Load at Input Shaft

Bearing specification (Open type, Unit)

Series	Size	A Bearing A		B Bearing B		a	b
		Basic Dynamic Load Rating	Basic Static Load Rating	Basic Dynamic Load Rating	Basic Static Load Rating		
		C	Co	C	Co		
		N	N	N	N	mm	mm
WPU-□-□-SDH	35	4000	2470	4000	2470	16.0	20.0
	42	4300	2950	4300	2950	16.0	22.5
	50	4500	3450	4500	3450	14.5	18.0
	63	4900	4350	4900	4350	15.5	21.8
	80	8800	8500	6400	6200	17.0	28.5



Maximum load (Average input rotation speed : 2000r/min, Life span : 7000h)



Lubricant Information

Grease

Sumiplex MP No.2 (SUMICO LUBRICANT CO., LTD.)
Operating temperature range: 0~40˚C (ambient temperature)

Grease application

- The quantity of grease applied to C should be adjusted depending on the mounting direction. C of the unit type product is already filled with the same quantity of grease as horizontal mounting.
- For vertical up/down, 50% of the space between input assy and casing inner wall should be filled with grease.
- If the amount of grease is not sufficient due to case design, please contact us.

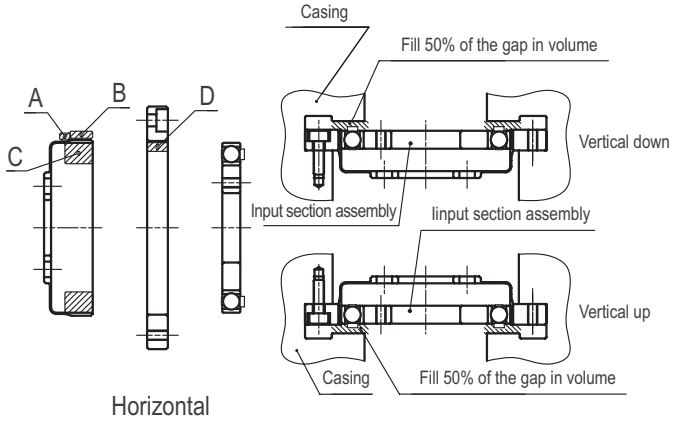
Please apply grease according to the table below.

[grams]

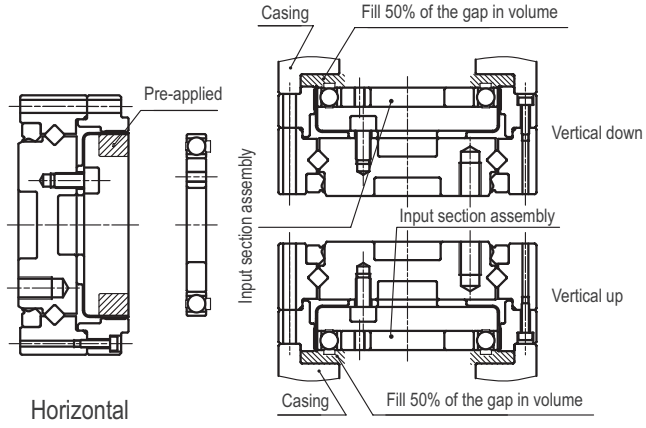
Size	Applied part					
	A	B	C Horizontal	C Vertical Up	C Vertical Down	D
35	0.2	0.2	3	4	5	0.2
42	0.3	0.3	5	6	7	0.3
50	0.4	0.4	8	9	11	0.4
63	1.8	0.8	16	19	21	0.8
80	1.5	1.5	36	42	48	1.5

Grease application location

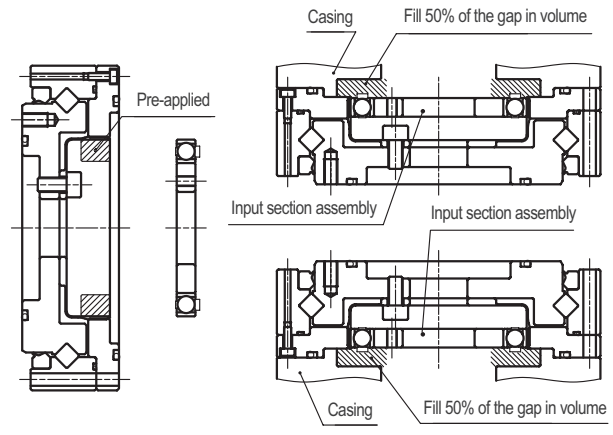
WPC-□-□-CD



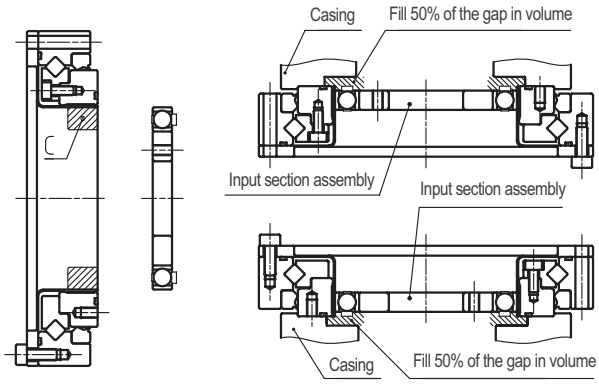
WPU-□-□-CD



WPU-□-□-CDH



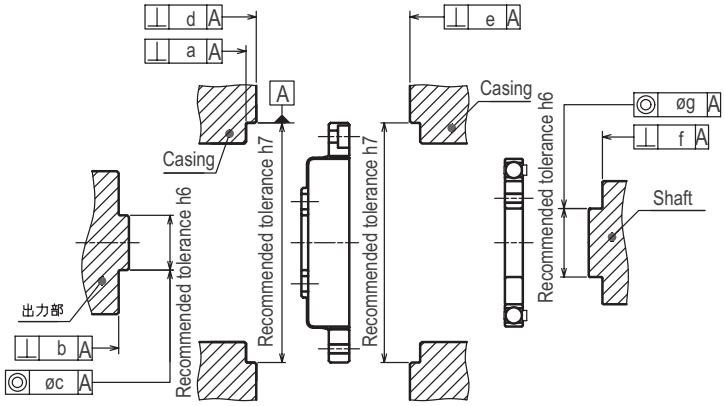
WPS-□-□-SD



Attachment Fixture Requirement

Attachment fixture requirement

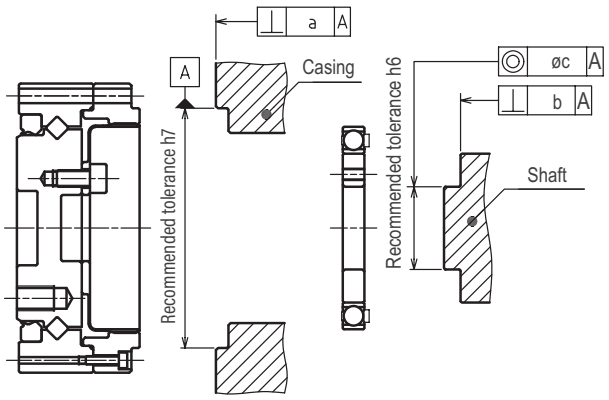
WPC-□-□-CD



Installation accuracy [mm]

Size	35	42	50	63	80
a	0.015	0.015	0.018	0.018	0.023
b	0.010	0.012	0.014	0.016	0.020
c	0.013	0.013	0.015	0.018	0.020
d	0.015	0.015	0.018	0.018	0.023
e	0.015	0.015	0.018	0.018	0.023
f	0.012	0.012	0.014	0.016	0.016
g	0.016	0.020	0.024	0.024	0.024

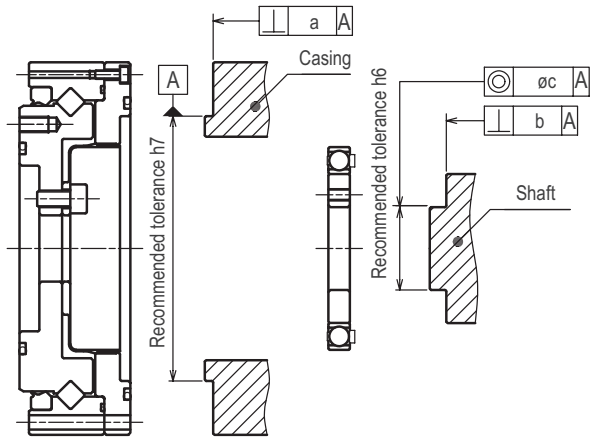
WPU-□-□-CD



Installation accuracy [mm]

Size	35	42	50	63	80
a	0.020	0.020	0.020	0.025	0.025
b	0.012	0.012	0.014	0.016	0.016
c	0.016	0.020	0.024	0.024	0.024

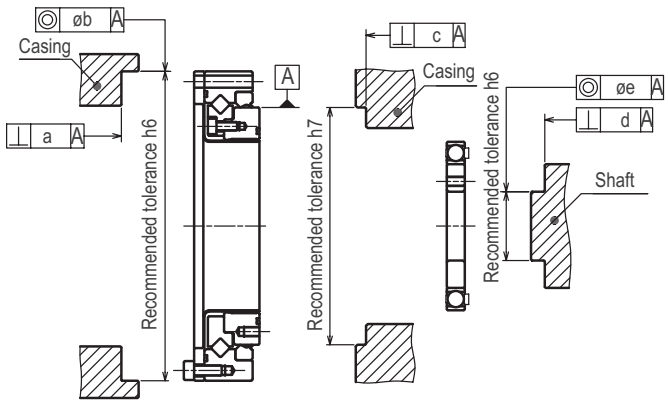
WPU-□-□-CDH



Installation accuracy [mm]

Size	35	42	50	63	80
a	0.020	0.020	0.020	0.025	0.025
b	0.012	0.012	0.014	0.016	0.016
c	0.016	0.020	0.024	0.024	0.024

WPS-□-□-SD



Installation accuracy [mm]

Size	35	42	50	63	80
a	0.020	0.020	0.020	0.025	0.025
b	0.020	0.020	0.020	0.025	0.025
c	0.020	0.020	0.020	0.025	0.025
d	0.012	0.012	0.014	0.016	0.016
e	0.016	0.020	0.024	0.024	0.024

Transmitting Torque

Bolting

Please refer to the table below for the bolt tightening torque.

Tightening torque for bolts

Bolt size	M3	M4	M5	M6	M8	M10
Tightening torque [Nm]	1.9	4.3	8.7	15	36	71

Recommended bolt: Strength rating above 12.9

Bolt specifications and transmitting torque (Closed Type, Unit)

WPU-☐-☐-CD: Output flange attachment

Size	35	42	50	63	80
Bolt size	M3	M5	M6	M8	M8
Bolt count	10	8	8	8	10
Bolt PCD [mm]	25	27	34	42	57
Tightening torque [Nm]	1.9	8.7	15	36	36
Transmitting torque [Nm]	58	141	252	566	960

WPU-☐-☐-CD: Internal gear attachment

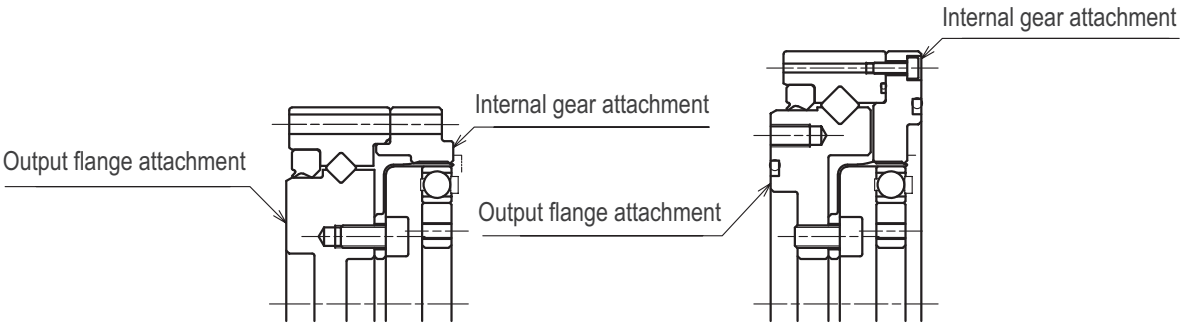
Size	35	42	50	63	80
Bolt size	M3	M3	M3	M3	M4
Bolt count	6	10	12	18	18
Bolt PCD [mm]	49	56	64	79	104
Tightening torque [Nm]	1.9	1.9	1.9	1.9	4.3
Transmitting torque [Nm]	68	130	178	330	757

WPU-☐-☐-CDH: Output fange attachment

Size	35	42	50	63	80
Bolt size	M3	M3	M3	M4	M5
Bolt count	6	8	8	10	10
Bolt PCD [mm]	64	74	84	102	132
Tightening torque [Nm]	1.9	1.9	1.9	4.3	8.7
Transmitting torque [Nm]	89	137	156	412	864

WPU-☐-☐-CDH: Internal gear attachment

Size	35	42	50	63	80
Bolt size	M3	M3	M3	M4	M5
Bolt count	6	8	8	10	10
Bolt PCD [mm]	64	74	84	102	132
Tightening torque [Nm]	1.9	1.9	1.9	4.3	8.7
Transmitting torque [Nm]	89	137	156	412	864



Transmitting Torque

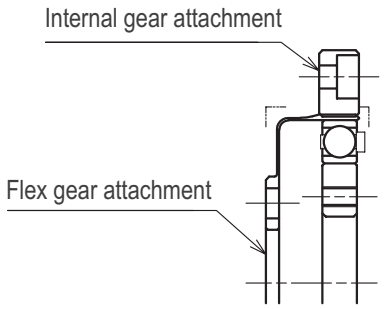
Bolt specifications and transmitting torque (Closed type, Component)

Flex gear attachment

Size	35	42	50	63	80
Bolt size	M3	M4	M4	M5	M6
Bolt count	8	8	8	8	10
Bolt PCD [mm]	17	19.5	24	30	41
Tightening torque [Nm]	1.9	4.3	4.3	8.7	15
Transmitting torque [Nm]	32	63	78	157	380

Internal gear attachment

Size	35	42	50	63	80
Bolt size	M3	M3	M3	M3	M4
Bolt count	6	8	12	12	12
Bolt PCD [mm]	44	54	62	75	100
Tightening torque [Nm]	1.9	1.9	1.9	1.9	4.3
Transmitting torque [Nm]	61	100	172	209	485



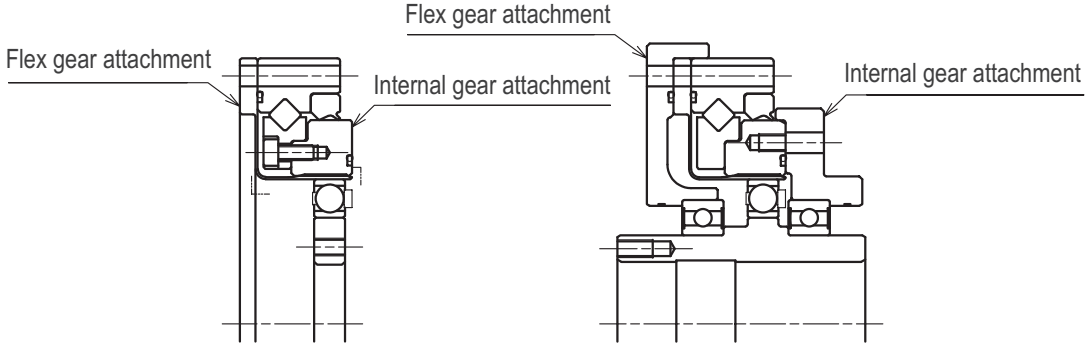
Bolt specifications and transmitting torque (Open type)

Flex gear attachment

Size	35	42	50	63	80
Bolt size	M3	M3	M3	M4	M5
Bolt count	8	12	12	12	12
Bolt PCD [mm]	64	74	84	102	132
Tightening torque [Nm]	1.9	1.9	1.9	4.3	8.7
Transmitting torque [Nm]	119	206	234	495	1037

Internal gear attachment

Size	35	42	50	63	80
Bolt size	M3	M3	M3	M4	M5
Bolt count	8	12	12	12	12
Bolt PCD [mm]	43	52	61.4	76	99
Tightening torque [Nm]	1.9	1.9	1.9	4.3	8.7
Transmitting torque [Nm]	80	145	171	369	778



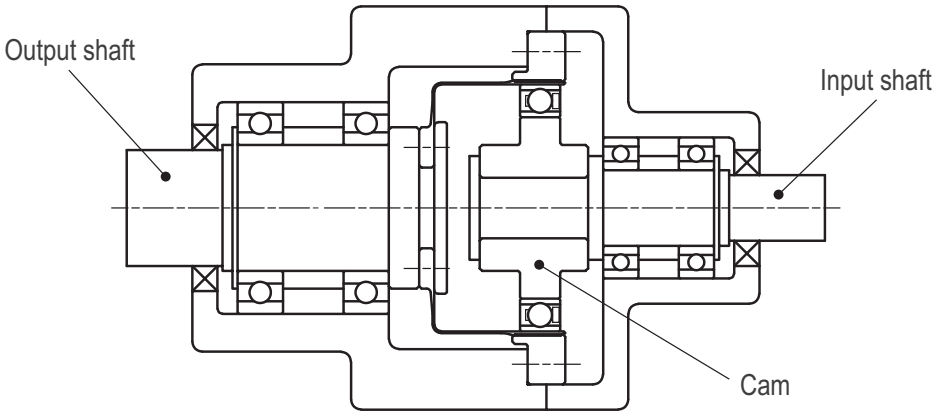
Installation and Assembly Instructions

WPC-□-□-C □

Shaft installation instruction

Please design the support structure for input shaft and output shaft so that both radial and axial loads are supported. (Diagram below shows an example)

Inside thrust load has an effect on the cam. Secure cam from possible axial movement.



Warm-up run

After assembly, “Warm-up run” is necessary before run with load / torque. The purpose is to coat the Flex gear and Internal gear surface evenly with enough grease in order to meet the load / torque performance.

Condition example

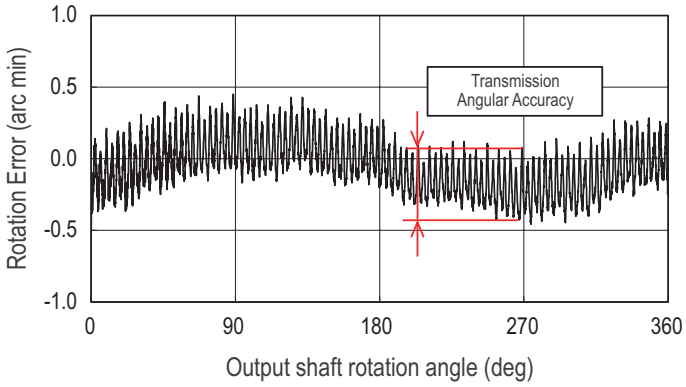
- Load - No load
- Input rotation speed - Start slowly from 1,000r/min or less, then accelerate up to 3,000r/min
- Test time - About 1 hour
- Output rotation angle - As large as possible

Characteristics Data

Transmission angular accuracy

What is Transmission Angular Accuracy?

It is the difference between the measured output rotation angle and the theoretical angle, while input shaft is rotated with no load.



[arc min]

Ratio	Size				
	35	42	50	63	80
50	2.0	2.0	1.5	1.0	1.0
80	1.5	1.5	1.0	1.0	1.0
100	1.5	1.5	1.0	1.0	1.0
120	-	1.5	1.0	1.0	1.0

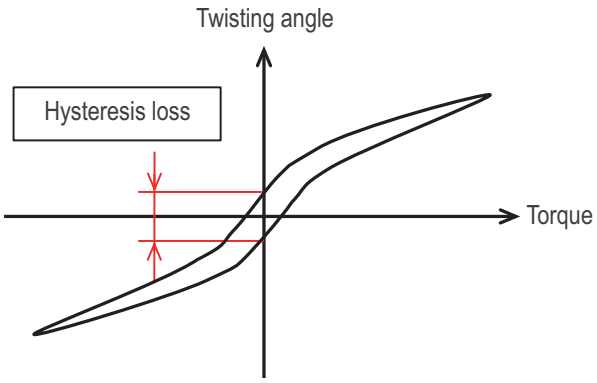
Table values are reference values.

Hysteresis loss

What is Hysteresis Loss?

When torque load is applied at the output shaft in alternate direction repeatedly with input shaft fixed, there is residual twisting angle when torque is back to zero.

In this context, hysteresis loss is the difference in the forward and backward twisting angle



[arc min]

Ratio	Size				
	35	42	50	63	80
50	2.0	2.0	2.0	2.0	2.0
80	1.5	1.5	1.0	1.0	1.0
100	1.5	1.5	1.0	1.0	1.0
120	-	1.5	1.0	1.0	1.0

Table values are reference values.

Characteristics Data

Maximum backlash

What is Maximum Backlash?

In this context, maximum backlash is the output backlash for spline type input shaft. (Backlash is zero for rigid type input, because gear engagement backlash is zero.)

[arc min]

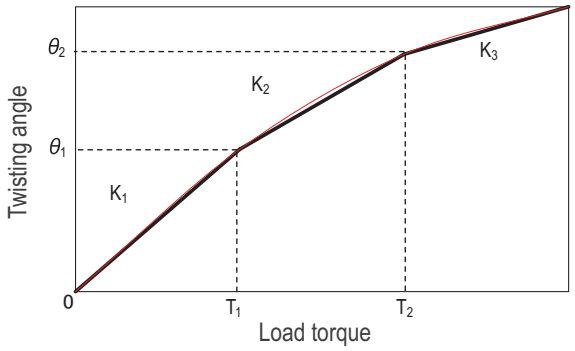
Ratio	Size				
	35	42	50	63	80
50	27	27	18	16	16
80	17	17	11	10	10
100	13	13	9	8	8
120	-	11	7	7	7

Stiffness (Closed type, Unit)

What is Stiffness?

In this context, stiffness is the output shaft twisting angle and the spring coefficient, while torque load is applied to the output shaft with input side fixed.

K1... Spring coefficient at 0 ~ T_1 torque
K2... Spring coefficient at T_1 ~ T_2 torque
K3... Spring coefficient at T_2 ~ torque



Ratio	Item	Unit	Size				
			35	42	50	63	80
-	T_1	Nm	2	3.9	7	14	29
-	T_2	Nm	6.9	12	25	48	108
50	K_1	× 10^4Nm/rad	0.39	0.66	1.1	2.2	4.6
	K_2	× 10^4Nm/rad	0.47	0.75	1.4	2.6	5.1
	K_3	× 10^4Nm/rad	0.52	0.82	1.4	2.7	5.6
	θ_1	arcmin	1.7	2.0	2.2	2.2	2.2
	θ_2	arcmin	5.0	5.5	6.3	6.4	7.2
80 100 120	K_1	× 10^4Nm/rad	0.44	0.86	1.6	2.9	6.2
	K_2	× 10^4Nm/rad	0.60	1.0	1.9	3.2	6.5
	K_3	× 10^4Nm/rad	0.72	1.0	1.9	3.1	6.5
	θ_1	arcmin	1.6	1.6	1.5	1.7	1.6
	θ_2	arcmin	4.0	4.1	4.6	5.2	5.7

Average value shown in the table.

Characteristics Data

Starting torque (Closed type, Unit)

What is Starting Torque?

Input torque needed for input side to start rotating (no load, ambient temperature: 25˚C).

[cNm]

Ratio	Size				
	35	42	50	63	80
50	7.0	11	14	17	26
80	6.8	9.5	13	24	26
100	6.4	9.4	11	14	20
120	-	8.1	9.3	14	20

*1 For reference only. Torque value may vary depending on the condition.

*2 Charts does not show effects due to rotation resistance of bearings and oil seals on the input side.

Output starting torque (Closed type, Unit)

What is Output Starting Torque?

Output torque needed for output side to start rotating (no load, ambient temperature: 25°C)

[Nm]

Ratio	Size				
	35	42	50	63	80
50	1.2	3.6	4.4	5.8	13
80	1.6	3.9	7.2	13	26
100	1.7	5.7	8.6	9.4	23
120	-	4.2	8.1	10	30

*1 For reference only. Torque value may vary depending on the condition.

*2 Charts does not show effects due to rotation resistance of bearings and oil seals on the input side.

No-load running torque (Closed type, Unit)

What is No-load Running Torque?

Input torque needed to keep it running with no load (average value, ambient temperature: 25˚C)

[cNm]

Ratio	Input Rotation Speed	Size				
		35	42	50	63	80
50	500r/min	3.4	7.5	9.2	17	35
	1000r/min	4.3	8.2	11	18	37
	2000r/min	5.0	8.5	13	18	39
	3500r/min	5.4	11	14	22	38
80	500r/min	3.2	7.6	10	20	35
	1000r/min	4.0	8.7	12	21	38
	2000r/min	4.8	8.9	14	22	39
	3500r/min	5.2	11	14	24	38
100	500r/min	3.2	7.1	11	21	36
	1000r/min	4.0	8.2	13	23	39
	2000r/min	4.7	8.4	14	24	39
	3500r/min	5.1	9.7	14	25	38
120	500r/min	-	6.7	9.8	23	40
	1000r/min	-	8.1	12	24	41
	2000r/min	-	8.4	13	26	41
	3500r/min	-	8.4	13	26	39

*1 For reference only. Torque value may vary depending on the condition.

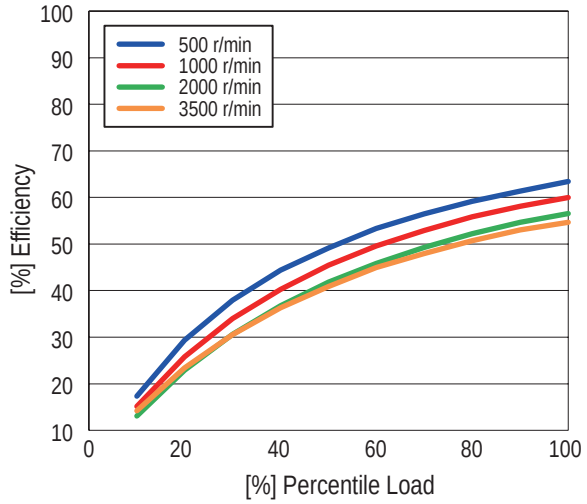
*2 Charts does not show effects due to rotation resistance of bearings and oil seals on the input side.

Characteristics Data

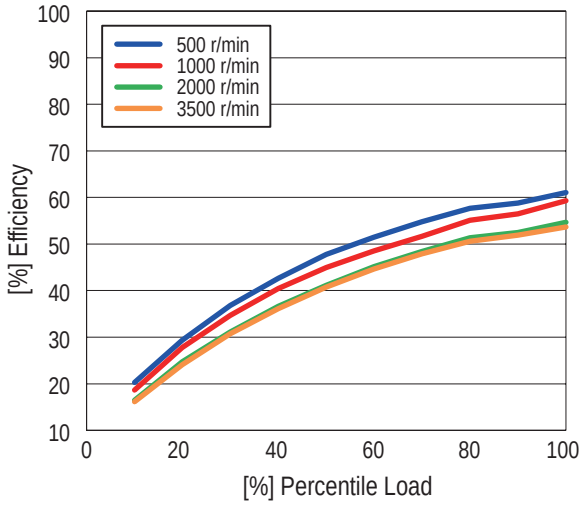
Efficiency (Closed type, Unit)

- Percentile load (%) is equal to load torque divided by allowable average torque.
- Ambient temperature: 25°C

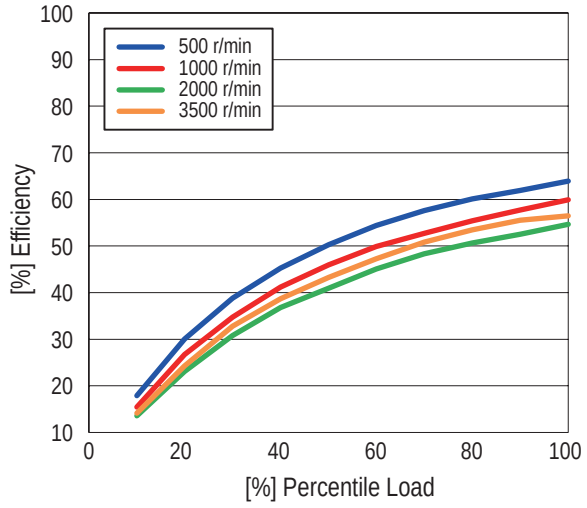
WPU-35-50



WPU-35-80



WPU-35-100



*1 These diagrams represent the average value of the actual measurement.

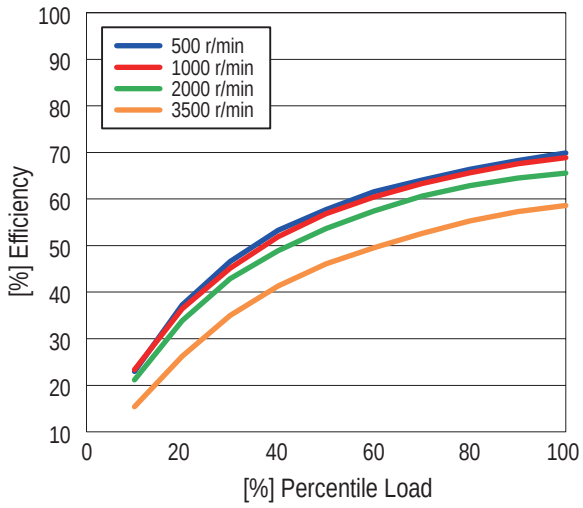
*2 Charts does not show effects due to rotation resistance of bearings and oil seals on the input side.

Characteristics Data

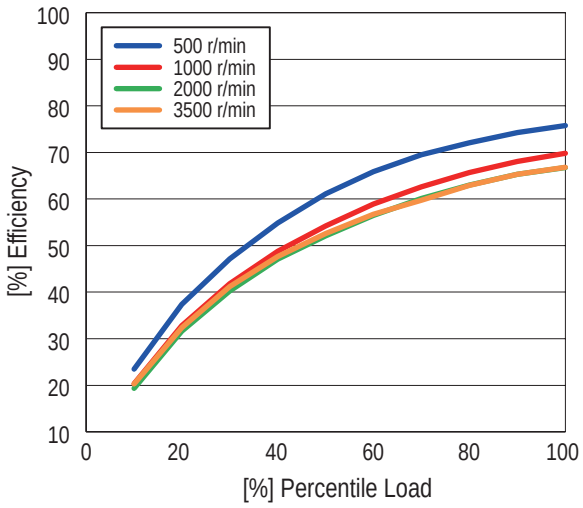
Efficiency (Closed type, Unit)

- Percentile load (%) is equal to load torque divided by allowable average torque.
- Ambient temperature: 25°C

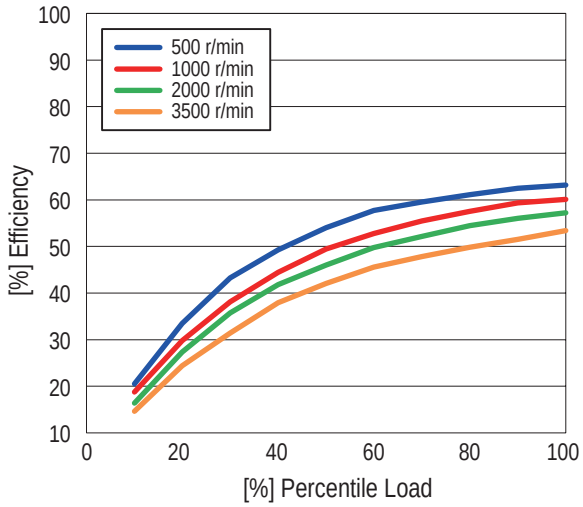
WPU-42-50



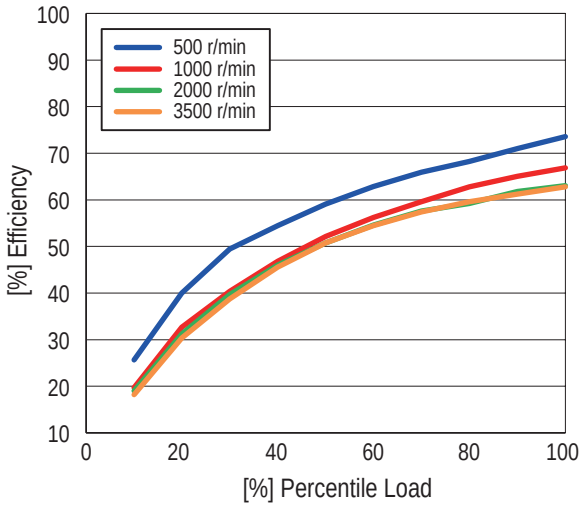
WPU-42-80



WPU-42-100



WPU-42-120



*1 These diagrams represent the average value of the actual measurement.

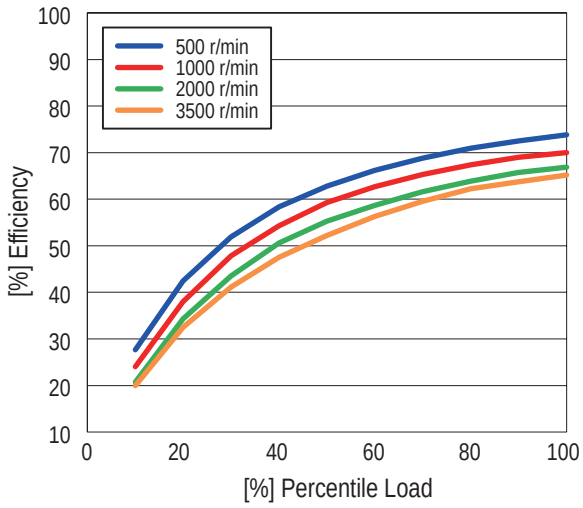
*2 Charts does not show effects due to rotation resistance of bearings and oil seals on the input side.

Characteristics Data

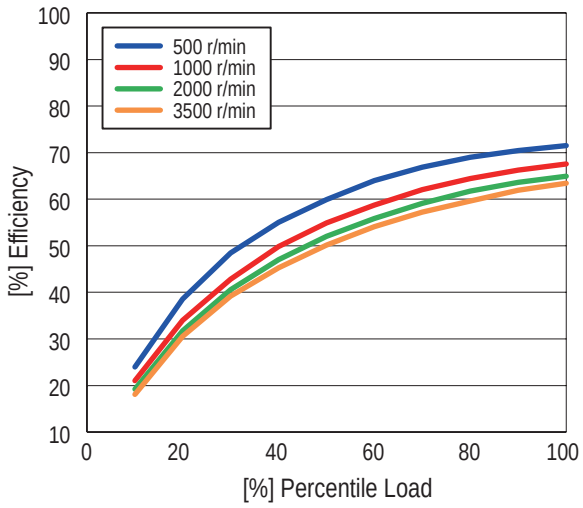
Efficiency (Closed type, Unit)

- Percentile load (%) is equal to load torque divided by allowable average torque.
- Ambient temperature: 25°C

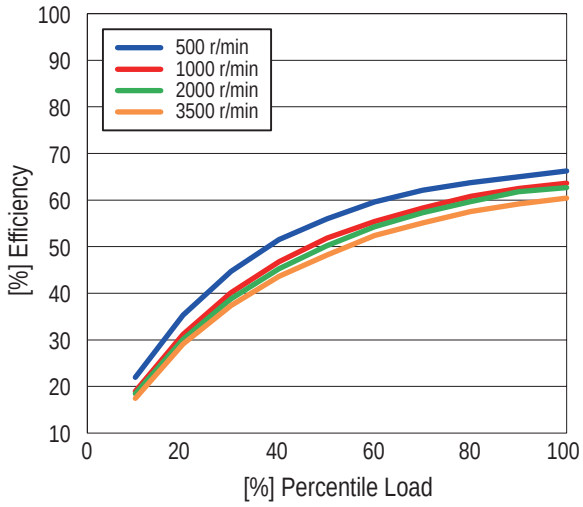
WPU-50-50



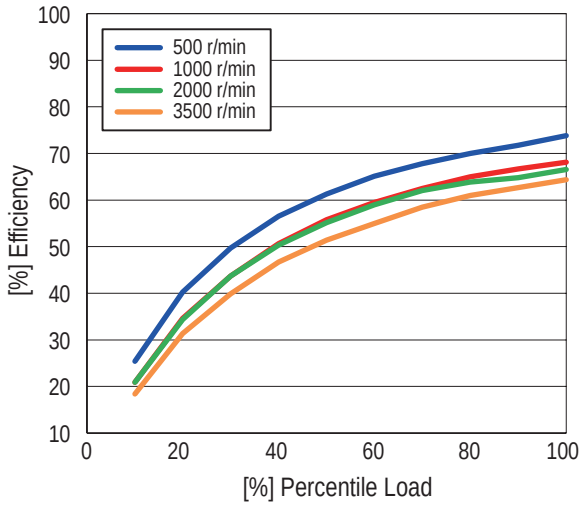
WPU-50-80



WPU-50-100



WPU-50-120



*1 These diagrams represent the average value of the actual measurement.

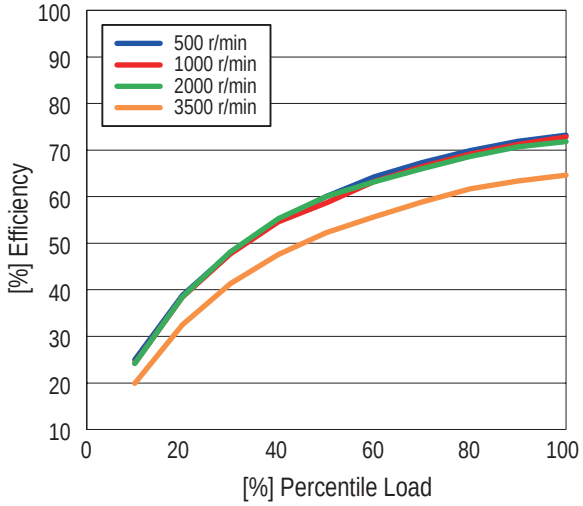
*2 Charts does not show effects due to rotation resistance of bearings and oil seals on the input side.

Characteristics Data

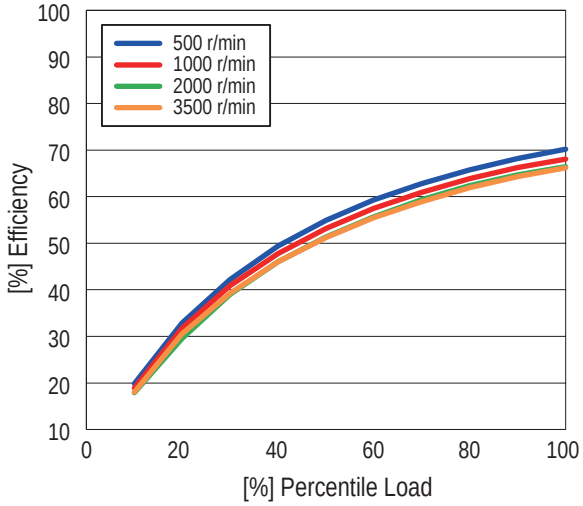
Efficiency (Closed type, Unit)

- Percentile load (%) is equal to load torque divided by allowable average torque.
- Ambient temperature: 25°C

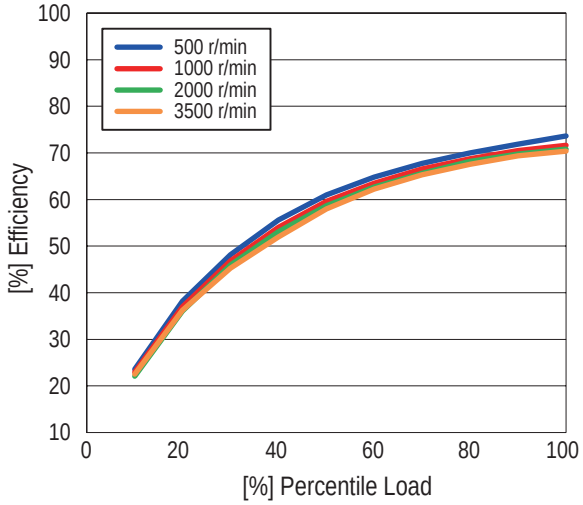
WPU-63-50



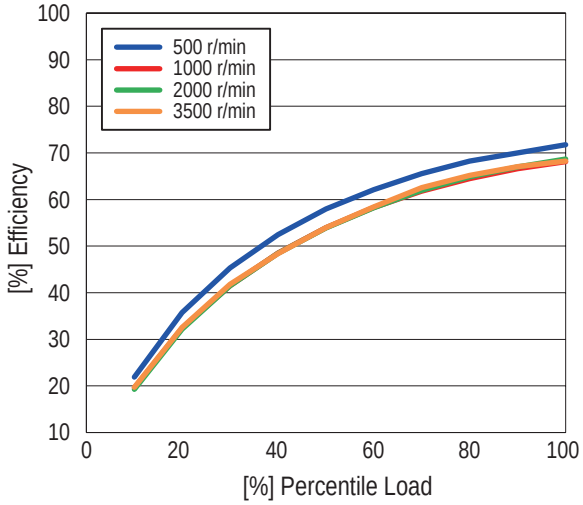
WPU-63-80



WPU-63-100



WPU-63-120



*1 These diagrams represent the average value of the actual measurement.

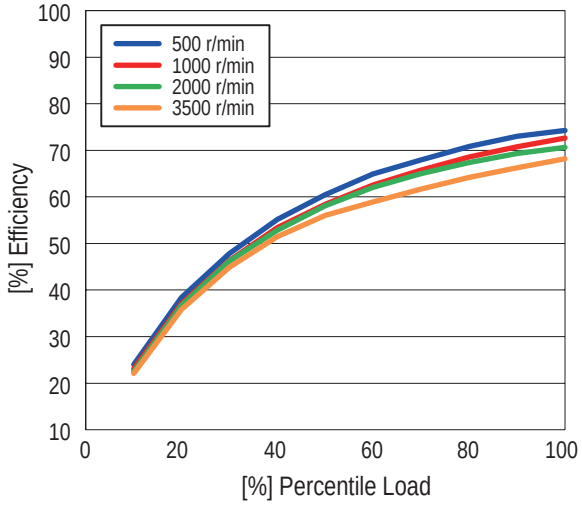
*2 Charts does not show effects due to rotation resistance of bearings and oil seals on the input side.

Characteristics Data

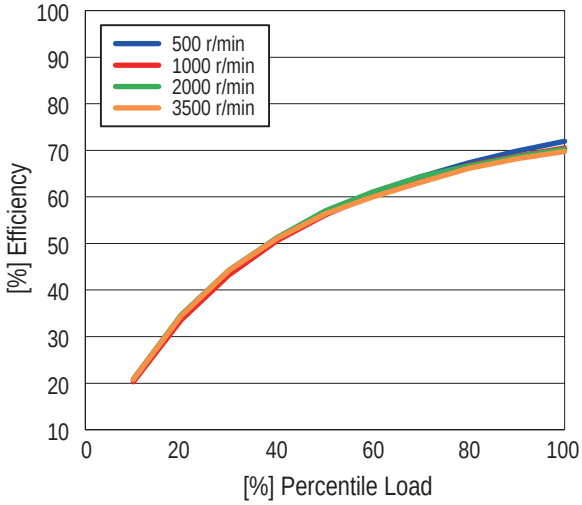
Efficiency (Closed type, Unit)

- Percentile load (%) is equal to load torque divided by allowable average torque.
- Ambient temperature: 25°C

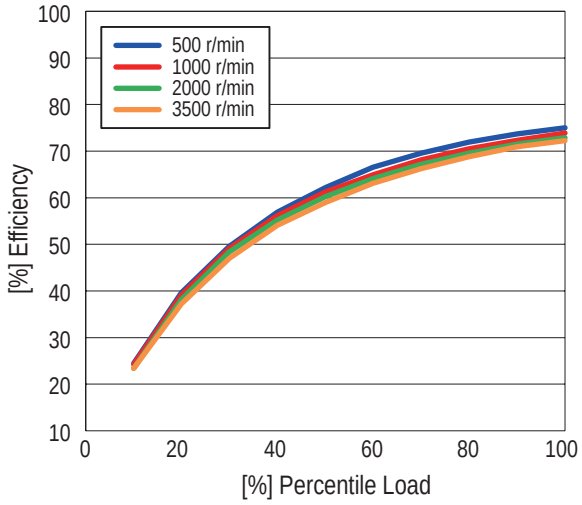
WPU-80-50



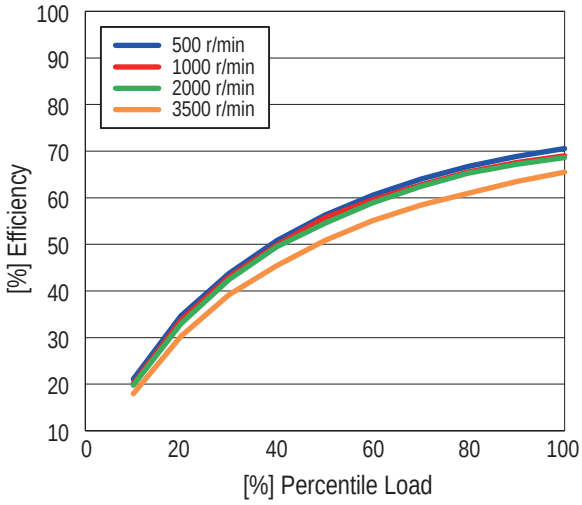
WPU-80-80



WPU-80-100



WPU-80-120



*1 These diagrams represent the average value of the actual measurement.

*2 Charts does not show effects due to rotation resistance of bearings and oil seals on the input side.